



HIGH SPEED PRECISION LATHE

Parts List

TSL-D

TAKISAWA

TS-L-D TYPE

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SEAT NO: 1 1/4

BED AND LEG

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	04- 02	Cover	1	
2	-----	Hollow set screw	8	
3	13- 19	Packing	1	
4	04- 01	Head stock frame	1	
5	16- 01	Cover	1	
6	16- 02	Cover	1	
7	-----	Hollow set screw	2	
8	-----	Washer	2	
9	-----	Hollow set screw	3	
10	-----	Taper pin	1	
11	-----	Name plate	1	
12	-----	Oval fillister head screw	6	
13	-----	Washer	3	
14	-----	Set screw	3	
15	16- 09	Hollow pin	1	
16	16- 08 10	Bolt, grip	1	
17	-----	Stop ring	1	
18	14- 12	Hollow set screw	1	
19	14- 11	Washer	1	
20	14- 01	Brake band	1	
21	14- 10	Trolley	1	
22	14-109	Hexagon head bolt	1	
23	14-110	Hexagon nut	1	
24	14- 08	Stop ring	1	
25	14-116	Stop ring	1	
26	14-102	Brake arm	1	
27	14-104	Pin	1	
28	14-117	Stop ring	1	
29	14-111	Adjustable bolt	1	
30	14-108	Hexagon head bolt	1	
31	14-107	Spring	1	
32	14-106	Collar	1	
33	-----	Flat fillister head screw	4	

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BED AND LEG

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
34	13- 22	Cover	1	
35	14-105	Pin	1	
36	14-112	Hexagon nut	1	
37	14-113	Bolt	1	
38	14-112	Hexagon nut	1	
39	14-118	Oval fillister head screw	1	
40	14-118	Oval fillister head screw	1	
41	14-119	Plate	1	
42	14-103	Bracket	1	
43	-----	Hollow set screw	1	
44	14-106	Collar	1	
45	-----	Hexagon nut	1	
46	-----	Name plate	1	
47	-----	Name plate	1	
48	-----	Name plate	1	
49	-----	Hexagon head bolt	6	
50	-----	Hexagon nut	6	
51	13- 08	Base plate	6	
52	-----	Hollow set screw	6	
53	-----	Drain plug	1	
54	-----	Cover	1	
55	-----	Flat fillister head screw	4	
56	13- 21	Cover	1	
57	13- 13	Grip	1	
58	21- 03	Start lever	1	
59	21- 02	Lever holder	1	
60	-----	Spring	1	
61	-----	Hollow pin	1	
62	-----	Rivet	10	
63	-----	Name plate	1	
64	21- 15	Plate	1	
65	-----	Hollow set screw	4	
66	-----	Taper pin	1	

SEAT NO: 1 1/4

BED AND LEG

ARK	INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
	67	-----	Set screw	1	
	68	21-01	Bracket	1	
	69	21-04	Cam	1	
	70	14-22	Shaft	1	
	71	76-28	Blank cap	1	
	72	76-N1	Nut	1	
	73	76-W1	Washer	1	
	74	76-A2	Thrust bearing	1	
	75	76-F7	Set screw	2	
	76	76-L1	Oil cap	1	
	77	-----	Hollow pin	1	
	78	-----	Hollow set screw	2	
	79	76-18	Bracket	1	
	80	76-A2	Thrust bearing	1	
	81	76-29	Collar	1	
	82	76-21	Shaft	1	
	83	14-31	Bracket	1	
	84	14-33	Hollow set screw	4	
	85	14-32	Hollow pin	4	
	86	14-43	Collar	1	
	87	14-30	Set screw	1	
	88	14-101	Pedal	1	
	89	-----	Set screw	2	
	90	-----	Hollow set screw	2	
	91	14-48	Bracket	1	
	92	14-F5	Set screw	3	
	93	76-B3	Hexagon head bolt	3	
	94	76-N2	Hexagon nut	3	
	95	76-13	Block	3	
	96	76-F4	Set screw	1	
	97	76-27	Grip	1	
	98	76-19	Bracket	1	
	99	-----	Hollow pin	1	

SEAT NO: 1 $\frac{3}{4}$ BED AND LEG

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
100	-----	Hollow set screw	2	
101	76-31	Blank cap	1	
102	76-R1	Steel ball	2	
103	76-E2	Spring	2	
104	76-B2	Set screw	2	
105	13-21	Cover	1	
106	-----	Flat fillister head screw	4	
107	-----	Hexagon head bolt	8	
108	-----	Washer	8	
109	13-01	Leg	1	
110	12-01	Bed	1	
111	13-29	Filter	1	
112	-----	Flat fillister head screw	2	
113	13-24	Cover	1	
114	-----	Flat fillister head screw	4	
115	02-88	Drain plug	1	
116	04-11	Drain nipple	1	
117	04-12	Pivotal key	2	
118	-----	Flat fillister head screw	6	

SEAT NO: 2 $\frac{1}{4}$

HEAD STOCK

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	02-01	Nut	1	
2	02-02	Washer	1	
3	02-03	V pulley	1	
4	02-07	Hollow set screw	4	
5	02-05	Bearing support	1	
6	02-06	Oil seal	1	
7	02-84	Stop ring	1	
8	02-08	Ball bearing	1	
9	02-80	Collar	1	
10	02-09	Spline shafe	1	
11	02-04	Key	1	
12	02-12	Stop ring	1	
13	02-10	Gear	1	
14	02-76	Gear	1	
15	02-13	Gear shaft	1	
16	02-11	Key	1	
17	02-14	Collar	1	
18	02-15	Ball bearing	1	
19	02-16	Stop ring	1	
20	-----	Set screw	2	
21	02-07	Hollow set screw	3	
22	02-27	Bearing support	1	
23	02-28	Ball bearing	1	
24	02-29	Gear	1	
25	02-61	Gear	1	
26	02-63	Gear	1	
27	02-17	Ball bearing	1	
28	02-18	Gear	1	
29	02-20	Gear shaft	1	
30	02-77	Key	2	
31	02-19	Key	1	
32	02-21	Ball bearing	1	
33	02-22	Bearing support	1	

SEAT NO: 2 1/4

HEAD STOCK

SEAT NO:

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK	INDEX NO
34	02-23	Cover	1		67
35	02-62	Hollow set screw	3		68
36	02-25	Bolt	1		69
37	02-26	Hexagon nut	1		70
38	02-72	Spindle	1		71
39	02-56	Key	1		72
40	02-75	Key	1		73
41	02-24	Drive pin	1		74
42	02-44	Drive pin screw	1		75
43	02-60	Plate	1		76
44	-----	Hollow set screw	3		77
45	02-46	Sleeve	1		78
46	02-31	Center	1		79
47	-----	Set screw	2		80
48	-----	Hollow set screw	4		81
49	02-30	Cover	1		82
50	02-32	Nut	1		83
51	02-33	Washer	1		84
52	02-34	Taper roller bearing	1		85
53	02-58	Set screw	1		86
54	02-57	Gear	1		87
55	02-78	Spring ring	1		88
56	02-58	Set screw	1		89
57	02-59	Collar	1		90
58	02-78	Spring ring	1		91
59	02-65	Gear	1		92
60	02-36	Set screw	3		93
61	02-73	Collar	1		94
62	02-78	Spring ring	1		95
63	02-74	Internal gear	1		96
64	02-36	Set screw	1		97
65	02-79	Collar	1		98
66	02-66	Gear	1		99

SEAT NO: 2 3/4

HEAD STOCK

REMARK	INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
	67	02-68	Collar	1	
	68	02-69	Taper roller bearing	1	
	69	02-71	Oil thrower	1	
	70	02-60	Front cap splash guard	1	
	71	02-70	Hollow set screw	4	
	72	02-36	Set screw	1	
	73	02-35	Shaft	1	
	74	02-37	O ring	1	
	75	02-50	Ball bearing	1	
	76	02-54	Set screw	1	
	77	02-55	Double gear	1	
	78	02-49	Collar	1	
	79	02-50	Ball bearing	1	
	80	02-82	Set screw	1	
	81	02-81	Collar	1	
	82	02-36	Set screw	1	
	83	02-35	Shaft	1	
	84	02-37	O ring	1	
	85	02-50	Ball bearing	1	
	86	02-54	Set screw	1	
	87	02-48	Gear	1	
	88	02-49	Collar	1	
	89	02-50	Ball bearing	1	
	90	02-82	Set screw	1	
	91	02-81	Collar	1	
	92	-----	Set screw	2	
	93	02-07	Hollow set screw	14	
	94	02-43	Bearing support	1	
	95	02-42	Oil seal	1	
	96	02-45	Ball bearing	1	
	97	02-41	Spline shaft	1	
	98	02-40	Key	1	
	99	02-47	Gear	1	

SHAT NO: 2 $\frac{1}{4}$

HEAD STOCK

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
100	02-52	Collar	1	
101	02-53	Ball bearing	1	

SEAT NO: 3 1/2

HEAD STOCK

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	03-18	Grip	1	
2	-----	Hollow pin	1	
3	03-06	Flat fillister head screw	3	
4	03-19	Spring	1	
5	03-08	Steel ball	1	
6	03-17	Bushing	1	
7	03-20	Shaft	1	
8	03-07	O ring	1	
9	03-16	Shoe	1	
10	-----	Hollow pin	1	
11	03-14	Shoe	1	
12	03-21	Grip	1	
13	03-13	Lever	1	
14	03-24	Lever holder	1	
15	-----	Hollow pin	1	
16	-----	Hollow pin	1	
17	03-06	Flat fillister head screw	3	
18	03-05	Bushing	1	
19	03-30	Shaft	1	
20	03-07	O ring	1	
21	03-29	Segment gear	1	
22	-----	Hollow pin	1	
23	03-28	Blank cap	1	
24	03-37	Gear	1	
25	-----	Hollow pin	1	
26	03-26	Shaft	1	
27	-----	Hollow pin	1	
28	03-24	Gear	1	
29	03-31	Blank cap	1	
30	-----	Set screw	1	
31	-----	O ring	1	
32	03-36	Shaft	1	
33	03-22	Key		

SEAT NO: 3 2/2

HEAD STOCK

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
34	-----	Hexagon nut	1	
35	03-32	Bolt	1	
36	03-33	Spring	1	
37	03-08	Steel ball	1	
38	03-23	Shifter	1	
39	03-21	Grip	1	
40	03-13	Lever	1	
41	03-11	Lever holder	1	
42	03-12	Hollow pin	1	
43	-----	Hollow pin	1	
44	03-06	Flat fillister head screw	3	
45	03-05	Bushing	1	
46	03-04	Shaft	1	
47	03-07	O ring	1	
48	03-03	Shoe	1	
49	-----	Hollow pin	1	
50	03-01	Shoe	1	
51	-----	Oil gage	1	
52	-----	Filter net	1	
53	-----	Rivet	7	
54	-----	Flat fillister head screw	2	
55	04-12	Oil basin	1	
56	-----	Nozzle	1	
57	-----	Hose	1	

SET NO: 4 1/2

GEAR BOX

INDEX NO	PARTS NO.	PARTS NAME	QTY	REMARK
1	34-01	Set screw	1	
2	34-02	Washer	1	
3	34-04	Collar	1	
4	34-08	Ball bearing	1	
5	34-03	Key	1	
6	34-14	Shaft	1	
7	34-10	Key	1	
8	34-09	Gear	1	
9	34-11	Gear	1	
10	34-12	Gear	1	
11	34-13	Ball bearing	1	
12	34-80	Set screw	1	
13	-----	Set screw	1	
14	34-24	Collar	1	
15	34-13	Ball bearing	1	
16	34-28	Shaft	1	
17	34-22	Key	1	
18	34-27	Key	1	
19	34-17	Gear	1	
20	34-16	Set screw	1	
21	34-18	Gear	1	
22	34-19	Gear	1	
23	34-20	Gear	1	
24	34-21	Gear	1	
25	34-25	Gear	1	
26	34-25	Set screw	1	
27	34-78	Bearing	1	
28	34-26	Gear	1	
29	34-29	Internal gear	1	
30	34-36	Hollow pin	1	
31	34-81	Set screw	1	
32	34-30	Nut	1	
33	34-31	Washer	1	

SEAT NO: 4 2/3

GEAR BOX

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK	SEAT NO INDEX NO
34	34-79	Taper roller bearing	1		67
35	34-80	Set screw	1		68
36	34-32	Collar	1		69
37	34-75	Taper pin	1		70
38	34-79	Taper roller bearing	1		71
39	34-35	Shaft	1		72
40	34-40	Ball bearing	1		73
41	34-41	Spline shaft	1		74
42	34-42	Gear	1		75
43	34-43	Key	1		76
44	34-44	Gear	1		77
45	34-61	Gear	1		78
46	34-60	Stop ring	1		79
47	34-68	Tumbler	1		80
48	34-23	Set screw	1		
49	34-49	Set screw	1		
50	34-50	Gear	1		
51	34-46	Bushing	1		
52	34-40	Ball bearing	1		
53	34-53	Gear	1		
54	34-54	Set screw	1		
55	34-55	Hollow pin	1		
56	34-58	Ball bearing	1		
57	34-60	Set screw	1		
58	34-57	Collar	1		
59	34-75	Taper pin	1		
60	34-58	Ball bearing	1		
61	34-64	Shaft	1		
62	34-69	Shaft	1		
63	34-81	Set screw	1		
64	34-47	Bushing	1		
65	34-48	Gear	1		
66	35-07	Shaft	1		

SHEET NO: 4 $\frac{3}{3}$ GEAR BOX

ARK	INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
	67	35-08	Key	1	
	68	35-01	Shifter	1	
	69	35-02	Rack	1	
	70	05-56	Hollow set screw	2	
	71	05-55	Hollow pin	2	
	72	05-52	Steel ball	1	
	73	05-51	Spring	1	
	74	05-53	Set screw	1	
	75	35-12	Shifter	1	
	76	05-52	Steel ball	1	
	77	05-51	Spring	1	
	78	05-53	Set screw	1	
	79	35-09	Shaft	1	
	80	35-10	Key	1	

SEAT NO: 5 1/2

GEAR BOX

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	34-07	Hollow set screw	3	
2	34-05	Bracket	1	
3	34-06	Oil seal	1	
4	34-33	Hollow set screw	4	
5	34-39	Cover	1	
6	34-86	Hexagon nut	1	
7	34-83	Screw	1	
8	36-01	Gear box frame	1	
9	36-06	Cover	1	
10	-----	Set pin	2	
11	-----	Felt	1	
12	35-06	Set screw	2	
13	35-17	Set screw	1	
14	-----	Set screw	1	
15	-----	Hollow set screw	3	
16	-----	Hollow set screw	1	
17	-----	Set screw	1	
18	34-63	Oil seal	1	
19	34-34	Cover	1	
20	34-33	Hollow set screw	3	
21	34-59	Oil seal	1	
22	34-38	Cover	1	
23	34-33	Hollow set screw	3	
24	34-84	Blank cap	1	
25	34-85	Flat fillister head screw	3	
26	35-13	Clamp plate	1	
27	35-15	Hollow set screw	2	
28	35-16	Taper pin	2	
29	34-74	Shaft	1	
30	34-70	Hollow set screw	2	
31	34-72	Shifter	1	
32	34-73	Hollow pin	1	
33	34-71	Segment gear	1	

SEAT NO: 5 1/2

GEAR BOX

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
34	34-67	Set screw	1	
35	34-52	Shaft	1	
36	34-51	Spring	1	
37	34-82	Pipe	1	
38	34-45	Grip	1	
39	34-37	Hollow pin	1	
40	35-03	Gear	1	
41	05-58	O ring	1	
42	35-11	Pinion shaft	1	
43	05-58	O ring	1	
44	36-02	Front cover	8	
45	-----	Hollow set screw	1	
46	35-04	Bushing	3	
47	05-60	Flat fillister head screw	1	
48	05-63	Hollow pin	1	
49	05-61	Lever holder	1	
50	05-64	Lever	1	
51	03-21	Grip	1	
52	05-59	Bushing	1	
53	05-60	Flat fillister head screw	3	
54	05-63	Hollow pin	1	
55	05-62	Hollow pin	1	
56	05-61	Lever holder	1	
57	05-64	Lever	1	
58	03-21	Grip	1	
59	29-12	Gear box name plate	1	
60	-----	Oval fillister head screw	6	

SHEET NO: 6 1/2

APRON

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	-----	Felt	1	
2	46- 01	Apron frame	1	
3	-----	Set screw	1	
4	-----	O ring	1	
5	45- 22	Funnel	1	
6	-----	Hollow set screw	2	
7	46- 03	Apron cover	1	
8	-----	Set screw	1	
9	07- 51	Set screw	1	
10	45- 25	Bushing	1	
11	45- 24	Blank cap	1	
12	07- 51	Set screw	1	
13	07- 53	Bushing	1	
14	-----	O ring	1	
15	-----	Taper pin	1	
16	-----	Washer	1	
17	-----	Hexagon nut	1	
18	69- D9	Longitudinal and cross feed table	1	
19	-----	Rivet	10	
20	07- 11	Bushing	1	
21	07- 87	Set screw	1	
22	46- 07	Oil gage	1	
23	-----	Plate	1	
24	69-D14	Pump table	1	
25	-----	Set screw	1	
26	08-05	Hollow set screw	6	
27	07-103	Steel ball	1	
28	07-104	Spring	1	
29	07-105	Set screw	1	
30	76- 30	Cover	1	
31	-----	Flat fillister head screw	3	
32	05- 62	Hollow pin	1	
33	05- 61	Lever holder	1	

SEAT NO: 6 2/3

APRON

SEAT NO

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK	INDEX NO
34	05-63	Hollow pin	1		67
35	05-64	Lever	1		68
36	05-65	Grip	1		69
37	07-65	Knob	1		70
38	-----	Hollow pin	1		71
39	07-58	Pump	1		72
40	07-62	Spring	1		73
41	07-60	Piston	1		74
42	07-61	O ring	1		75
43	07-59	Nut	1		76
44	07-69	Check valve	1		77
45	07-72	Tee joint	1		78
46	07-69	Nipple	1		79
47	07-73	Pipe	1		80
48	07-70	Hexagon nut	1		
49	07-69	Nipple	1		
50	07-73	Inlet pipe	1		
51	07-70	Hexagon nut	1		
52	07-69	Check valve	1		
53	07-67 -68	Pipe	1		
54	07-70	Hexagon nut	1		
55	-----	Blank cap	1		
56	-----	Hexagon nut	1		
57	-----	Washer	1		
58	22-08	Chasing dial	1		
59	33-02	Shaft	1		
60	22-03	Key	1		
61	22-04	Case	1		
62	31-18	Hollow set screw	1		
63	33-16	Collar	1		
64	33-11	Gear	1		
65	-----	Washer	1		
66	-----	Hexagon nut	1		

SEAT NO: 6 3/4

APRON

REMARK	INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
	67	07- 79	Hexagon nut	1	
	68	07- 78	Hollow set screw	1	
	69	07- 81	Taper pin	1	
	70	45- 09	Inter lock shifter	1	
	71	07-106	Cam shaft	1	
	72	07- 75	Screw	1	
	73	45- 11	Half nut body	1/2	
	74	45- 13	Half nut	1	
	75	07- 98	Set screw	8	
	76	07-75	Spacer	1	
	77	07-75	Screw	1	
	78	07-100	Set screw	2	
	79	07-76	Gib	1	
	80	45- 11	Half nut body	1/4	

SEAT NO: 7 1/4

APRON

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	07-108	Screw & Washer	1	
2	07- 57	Grip	1	
3	07- 56	Handle	1	
4	07- 32	Key	1	
5	45- 01	Gear shaft	1	
6	07- 50	Bushing	1	
7	07- 51	Set screw	1	
8	07- 44	Key	1	
9	45- 02	Gear	1	
10	-----	Set screw	1	
11	45- 21	Bushing	1	
12	-----	Set screw	1	
13	07- 40	Pinion gear	1	
14	45- 03	Shaft	1	
15	07- 51	Set screw	1	
16	45- 16	Bushing	1	
17	07- 33	Stop ring	1	
18	45- 05	Gear	1	
19	45- 04	Gear	1	
20	07- 32	Key	1	
21	76- 20	Blank Cap	1	
22	76- E2	Spring	1	
23	76- F4	Set screw	1	
24	76- 11	Dog	1	
25	76- 08	Pin	1	
26	76- 06	Bracket	1	
27	-----	Hollow pin	1	
28	76- S1	Stop ring	1	
29	76- 07	Work carry	1	
30	76- 12	Washer	1	
31	-----	Spring	1	
32	-----	Hollow pin	1	
33	76- 09	Pin	1	

SEAT NO: 7 $\frac{2}{3}$ APRON

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK	SEAT INDEX
34	76-81	Hollow set screw	3		67
35	76-10	Key	1		68
36	76-05	Pin	1		69
37	76-E1	Spring	1		70
38	05-65	Grip	1		71
39	76-03	Lever	1		72
40	76-F1	Flat fillister head screw	4		73
41	76-04	Cover	1		74
42	76-02	Lever holder	1		75
43	-----	Stop pin	1		76
44	-----	Set screw	1		77
45	76-20	Blank cap	1		78
46	76-17	Nut	2		80
47	76-01	Block	1		81
48	07-16	Pin	1		81
49	07-13	Washer	1		81
50	07-12	Thrust bearing	1		81
51	76-24	Gear	1		81
52	76-22	Clutch	1		81
53	76-F2	Flat fillister head screw	4		81
54	07-14	Key	1		81
55	07-01	Shaft	1		9
56	07-05	Key	1		9
57	07-10	Thrust bearing	1		9
58	07-96	Spring	1		9
59	07-07	Washer	1		9
60	07-82	Bushing	1		9
61	07-83	Needle bearing	1		9
62	76-23	Clutch	1		
63	07-04	Worm gear	1		
64	07-87	Set screw	1		
65	07-12	Thrust bearing	1		
66	07-02	Nut	1		

SEAT NO: 7 3/4

APRON

REMARK	INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
	67	07- 03	Flat fillister head screw	1	
	68	07- 23	Shaft	1	
	69	45- 06	Gear	1	
	70	07- 22	Bushing	1	
	71	07- 51	Set screw	1	
	72	07- 27	Knob	1	
	73	07- 28	Taper pin	1	
	74	45- 08	Shaft	1	
	75	45- 07	Gear shifter	1	
	76	-----	Set screw	1	
	77	07- 26	Taper pin	1	
	78	07- 90	Nut	1	
	79	07- 89	Washer	1	
	80	07- 88	Taper roller bearing	1	
	81	07- 85	Gear	1	
	82	-----	Spring ring	1	
	83	07- 86	Key	1	
	84	07- 84	Worm shaft	1	
	85	07- 88	Taper roller bearing	1	
	86	07- 89	Washer	1	
	87	07- 90	Nut	1	
	88	07-114	Oil seal	1	
	89	07- 94	Bushing	1	
	90	-----	Set screw	1	
	91	07- 91	Gear	1	
	92	07- 92	T type key	2	
	93	07- 93	Bushing	1	
	94	-----	Set screw	1	
	95	07-113	Oil seal	1	

SEAT NO: B 1/2

APRON

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	-----	O ring	1	
2	-----	Set screw	1	
3	46-01	Apron frame	1	
4	-----	Felt	1	
5	07-78	Hollow set screw	1	
6	07-79	Hexagon nut	1	
7	07-81	Taper pin	1	
8	07-80R	Inter lock shifter	1	
9	07-106R	Cam shaft	1	
10	07-74R	Half nut body	½	
11	07-75	Screw	1	
12	07-75	Screw	1	
13	-----	Rivet	1	
14	07-98	Set screw	8	
15	07-100	Set screw	2	
16	07-74R	Half nut body	½	
17	07-76	Gib	1	
18	07-99	Half nut	1	
19	-----	Blank cap	1	
20	31-14	Gear	1	
21	33-13	Gear	1	
22	33-12	Gear	1	
23	-----	Hexagon nut	1	
24	-----	Washer	1	
25	33-07	Chasing dial	1	
26	33-02	Shaft	1	
27	-----	Key	1	
28	23-17	Case	1	
29	31-18	Screw	1	
30	33-16	Collar	1	
31	33-11	Gear	1	
32	-----	Washer	1	
33	-----	Hexagon	1	

SEAT NO: 8 1/2

APRON

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
34	46- 03	Cover	1	
35	-----	Set screw	1	
36	08- 05	Hollow set screw	6	
37	33- 18	Plate	1	
38	-----	Plate	1	
39	46- 07	Oil Gage	1	
40	07- 11	Bushing	1	
41	07- 87	Set screw	1	
42	69- D9	Plate	12	
43	-----	Rivet	1	
44	07-103	Steel ball	1	
45	07- 104	Spring	1	
46	07-105	Set screw	1	
47	07- 63	Hollow pin	1	
48	05- 65	Grip	1	
49	05- 64	Lever	1	
50	05- 61	Lever holder	1	
51	05- 62	Hollow pin	1	
52	76- 30	Cover	1	
53	-----	Flat fillister head screw	3	
54	-----	Hexagon nut	1	
55	-----	Taper pin	1	
56	-----	O ring	1	
57	07- 53	Bushing	1	
58	07- 51	Set screw	1	
59	45- 24	Blank cap	1	
60	45- 25	Bushing	1	
61	07- 51	Set screw	1	
62	-----	Set screw	1	

SEAT NO: 9 1/4

APRON

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	07-113	Oil seal	1	
2	07- 93	Bushing	1	
3	-----	Set screw	2	
4	07- 92	T type key	1	
5	07- 91	Gear	1	
6	07- 94	Bushing	1	
7	-----	Set screw	1	
8	07-114	Oil seal	1	
9	07- 90	Nut	1	
10	07- 89	Washer	1	
11	07- 88	Taper roller bearing	1	
12	07- 84	Worm gear	1	
13	07- 86	Key	1	
14	-----	Spring ring	1	
15	07- 85	Gear	1	
16	07- 88	Taper roller bearing	1	
17	07- 89	Washer	1	
18	07- 90	Nut	1	
19	07- 27	Knob	1	
20	07- 28	Hollow pin	1	
21	45- 08	Shaft	1	
22	07- 24R	Shifter	1	
23	07- 26	Hollow pin	1	
24	-----	Set screw	1	
25	07- 23	Shaft	1	
26	07- 29R	Gear	1	
27	07- 22	Bushing	1	
28	07- 51	Set screw	1	
29	05- 65	Grip	1	
30	76- 03	Lever	1	
31	76- F1	Flat fillister head screw	1	
32	76- 04	Cover	1	
33	-----	Stop pin	1	

SEAT NO: 9 3/8

APRON

SEAT 1

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK	INDEX
34	-----	Set screw	1		67
35	76-20	Blank cap	1		68
36	76-02	Lever holder	1		69
37	07-17	Nut	2		70
38	76-01	Collar	1		71
39	07-16	Pin	2		72
40	07-13	Washer	1		73
41	07-12	Thrust bearing	1		74
42	76-24	Gear	1		75
43	76-22	Clutch	1		76
44	76-12	Flat fillister head screw	4		77
45	07-14	Key	1		78
46	07-01	Shaft	1		79
47	07-05	Key	1		80
48	07-10	Thrust bearing	1		81
49	07-96	Spring	1		82
50	07-07	Washer	1		83
51	07-82	Bushing	1		84
52	07-63	Needle bearing	1		85
53	76-25	Clutch	1		86
54	07-04	Worm gear	1		87
55	07-12	Thrust bearing	1		88
56	07-87	Set screw	1		89
57	07-02	Nut	1		90
58	07-03	Flat fillister head screw	1		91
59	77-14R	Screw	1		92
60	77-15R	Roller	1		93
61	77-07R	Shaft	1		94
62	76-13	Key	1		95
63	76-12	Hollow pin	1		96
64	77-81	Stop ring	1		97
65	76-T2	Hollow pin	1		98
66	77-12R	Cam	1		

SHEET NO: 9 $\frac{3}{8}$ APRON

REMARK	INDEX NO.	PARTS NO	PARTS NAME	QTY	REMARK
	67	77- 09R	Shaft	1	
	68	77- 06R	Bracket	1	
	69	76- B1	Spring	1	
	70	76- 05R	Pin	1	
	71	76- 10	T type key	1	
	72	76- 08	Pin	1	
	73	77- 11R	Dog	1	
	74	76- F4	Set screw	2	
	75	76- E2	Spring	1	
	76	76- 20	Blank cap	1	
	77	45- 03	Shaft	1	
	78	45- 16	Bushing	1	
	79	07- 51	Set screw	1	
	80	07- 33	Stop ring	1	
	81	07- 30	Gear	1	
	82	07- 31	Gear	1	
	83	07- 32	Key	1	
	84	07- 44	T type key	1	
	85	07- 45R	Gear	1	
	86	07- 51	Set screw	1	
	87	45- 21	Bushing	11	
	88	-----	Set screw	1	
	89	07- 40	Pinion shaft	1	
	90	07- 57	Grip	1	
	91	07-108	Screw & Washer	1	
	92	07- 56	Handle	1	
	93	07- 32	Key	1	
	94	07- 52R	Pinion gear	1	
	95	07- 50	Bushing	1	
	96	07- 51	Set screw	1	
	97	07- 87	Set screw	1	
	98	76- B1	Hollow set screw	3	

SHEET NO: 10 1/2

CARRIAGE

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	09-40	Grip	1	
2	09-29	Hollow pin	1	
3	09-39	Handle	1	
4	09-47	Set screw	1	
5	09-48	Collar	1	
6	09-31	Dial collar	1	
7	09-33	Thumb screw	1	
8	09-18	Nut	1	
9	09-19	Washer	1	
10	09-20	Thrust bearing	1	
11	09-28	Hollow set screw	2	
12	09-27	Bracket	1	
13	09-32	Oil cap	1	
14	09-20	Thrust Bearing	1	
15	09-26	Feed screw	1	
16	10-14 -15	Female screw	1	
17	10-43	Segment block	1	
18	09-21	Hollow set screw	2	
19	09-14	Oval fillister head screw	2	
20	09-54	Dust protector	1	
21	-----	Bolt	2	
22	09-01	Carriage	1	
23	09-14	Oval fillister head screw	2	
24	09-09	Dust protector	1	
25	09-43	Clamping plate	1	
26	09-22	Hollow set screw	1	
27	09-34	Blank cap	7	
28	09-14	Oval fillister head screw	2	
29	09-55	Chip guard	1	
30	15-15	Oil cap	1	
31	09-25	Hexagon bolt	1	
32	09-21	Hollow set screw	2	
33	09-23	Hollow set screw	3	
		27		

SEAT NO: 10 1/2

CARRIAGE

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
34	-----	Taper pin	1	
35	09-44	Clamping plate	1	
36	09-42	Clamping plate	1	
37	09-53	Dust protector	1	
38	09-14	Oval fillister head screw	2	
39	09-02	Clamping plate	1	
40	09-05	Hexagon nut	7	
41	09-06	Set screw	7	
42	09-04	Hexagon head bolt	4	
43	09-03	Gib	1	
44	09-10	Dust protector	1	
45	09-14	Oval fillister head screw	2	

SEAT NO: 11 1/2

CROSS SLIDE AND TOOL POST

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	10-21	Tool slide	1	
2	10-19B	Flat head screw	1	
3	10-03	Oil cap	1	
4	10-13	Hollow set screw	1	
5	10-54	Stop pin	1	
6	10-38	Hollow set screw	1	
7	-----	Hollow set screw	2	
8	10-11	Swival slide	1	
9	10-30	Female screw	1	
10	10-42	Taper gib	1	
11	10-33	Nut	1	
12	10-34	Washer	1	
13	10-35	Thrust bearing	1	
14	10-22	Bracket	1	
15	10-03	Oil cap	1	
16	-----	Hollow set screw	2	
17	10-35	Thrust bearing	1	
18	10-19B	Flat head screw	1	
19	10-25	Taper pin	2	
20	10-32	Feed screw	1	
21	10-44	Dial collar	1	
22	10-36	Thumb screw	1	
23	10-37	Handle	1	
24	10-31	Hollow pin	1	
25	10-39	Grip	1	
26	-----	Screw	1	
27	-----	Stop pin	1	
28	10-12	Cross slide	1	
29	10-26	Castle nut	3	
30	10-10	Taper pin	1	
31	10-19A	Flat head screw	1	
32	-----	Dust protestor	1	
33	-----	Oval fillister head screw	2	

SEAT NO: 11 1/2

CROSS SLIDE AND TOOL POST

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
34	10-07	Hollow set screw	1	
35	10-41	Hollow set screw	2	
36	10-47	Set screw	1	
37	09-32	Oil cap	1	
38	10-19A	Flat head screw	1	

SEAT NO: 12 $\frac{1}{2}$

TOOL POST

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	10-03	Oil cap	1	
	-04		1	
2	10-15	Cap nut, lever	1	
3	10-16	Grip	1	
4	10-51	Set screw	1	
5	10-49	Pin	1	
6	10-06	Thrust bearing	1	
7	10-08	Collar	1	
8	10-05	Clamp bolt	8	
9	10-20	Square tool post	1	
10	10-48	Taper bushing	1	
11	10-50	Set screw	3	
12	10-09	Clamp bolt	1	
13	10-07	Set screw	1	
14	10-19E	Flat head screw	1	
15	10-21	Tool Slide	1	
16	10-28	Stop pin	1	
17	10-29	Spring	1	
18	10-27	Bushing	1	
19	10-03	Oil cap	1	
20	-----	Stop pin	1	
21	10-38	Hollow set screw	1	
22	10-13	Hollow set screw	1	
23	10-30	Female screw	1	
24	10-42	Taper gib	1	
25	10-33	Nut	1	
26	10-34	Washer	1	
27	10-35	Thrust bearing	1	
28	10-03	Oil cap	1	
29	10-22	Bracket	1	
30	-----	Set screw	2	
31	10-35	Thrust bearing	1	
32	10-19B	Flat head screw	1	
33	10-25	Taper pin	2	

SEAT NO: 12- 2/2

TOOL POST

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
34	10-32	Feed screw	1	
35	10-44	Dial collar	1	
36	10-36	Thumb screw	1	
37	10-37	Handle	1	
38	10-31	Hollow pin	1	
39	10-39	Grip	1	
40	10-11	Swival slide	1	
41	-----	Clamp screw	2	
42	10-07	Hollow set screw	1	

SEAT NO: 13 1/2

TAIL STOCK

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	11-08	Hollow pin	1	
2	11-04	Lever	1	
3	11-09	Eccentric shaft	1	
4	11-01	Grip	1	
5	11-02	Lever	1	
6	11-03	Lever Holder	1	
7	11-07	Lever	1	
8	11-06	Straight pin	1	
9	-----	Set screw	1	
10	11-44	Oil cap	3	
11	11-41	Oil cap	1	
12	11-21	Center	1	
13	11-24	Sleeve	1	
14	11-26	Female screw	1	
15	11-25	Set screw	2	
16	-----	Pin	1	
17	11-05	Pipe	1	
18	11-27	Feed screw	1	
19	11-31	Key	1	
20	11-20	Flat fillister head screw	4	
21	11-19	Dust protector	1	
22	11-48	O ring	1	
23	11-46	T type key	1	
24	11-47	Body	1	
25	11-49	Flat fillister head screw	4	
26	11-33	Dust protector	2	
27	11-28	Thrust bearing	1	
28	11-37	Bracket	1	
29	11-38	Hollow set screw	4	
30	11-28	Thrust bearing	1	
31	11-29	Washer	1	
32	11-30	Nut	1	
33	11-39	Dial collar		

SEAT NO: 13 2/3

TAIL STOCK

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
34	11-45	Handle	1	
35	11-43	Spring	1	
36	-----	Washer	1	
37	11-54	Cap nut	1	
38	11-42	Grip	1	
39	11-49	Oval fillister head screw	2	
40	11-36	Dust protector	1	
41	11-17	Adjusting bolt	2	
42	11-18	Flat fillister head screw	2	
43	11-16	Gib	1	
44	11-22	Base	1	
45	11-49	Oval fillister head screw	2	
46	11-36	Dust protector	1	
47	11-13	Hollow set screw	1	
48	11-40	Collar	2	
49	-----	Plate	4	
50	-----	Rivet	1	
51	11-11	Holder	1	
52	11-10	Hollow pin	1	
53	11-12	Bolt	1	
54	11-23	Clamping plate	1	
55	11-14	Castle nut	1	
56	11-15	Hollow set screw	1	

SEAT NO: 14 1/2

LEAD SCREW

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	-----	V type belt	3	
2	15-48	Shaft	1	
3	15-44	Ball bearing	1	
4	15-45	Tension pulley	1	
5	15-44	Ball bearing	1	
6	15-19	Hexagon nut	1	
7	15-20	Washer	1	
8	15-18	Tension arm	1	
9	15-41	Set screw	1	
10	15-21	Clamping bolt	1	
11	05-01	Flat fillister head screw	1	
12	34-02	Washer	1	
13	15-32	Change gear	1	
14	15-59	Oil nipple	1	
15	-----	Set screw	1	
16	15-23	Washer	1	
17	34-04	Collar	1	
18	19-29	Change gear	1	
19	15-57	Key	1	
20	15-56	Collar	1	
21	15-58	Bushing	1	
22	15-37	Shaft	1	
23	15-63	Thrust bearing	1	
24	15-50	Quadrant	1	
25	15-53	Nut	1	
26	15-19	Hexagon nut	1	
27	15-19	Washer	1	
28	15-52	Bolt	1	
29	34-01	Flat fillister head screw	1	
30	34-02	Washer	1	
31	34-04	Collar	1	
32	15-22	Change gear	1	
33	-----	Hollow set screw	1	

SEAT NO: 14- 2/2

LEAD SCREW

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
34	16-03	Guard	1	
35	-----	Flat fillister head screw	1	
36	-----	Washer	1	
37	34-62	Hollow pin	1	
38	15-02	Feed rod	1	
39	34-65	Taper pin	1	
40	15-01	Lead screw	1	
41	15-03	Rack	1	
42	-----	Hollow pin	3	
43	-----	Hollow set screw	3	
44	15-09	Set screw	1	
45	15-08	Bushing	1	
46	15-15	Plug	1	
47	15-07	Bracket	1	
48	15-09	Set screw	1	
49	-----	Hexagon nut	1	
50	-----	Washer	1	
51	15-06	Taper pin	1	
52	15-14	Hollow set screw	2	
53	15-11	Bushing	1	
54	15-16	Hollow set screw	1	
55	-----	Hexagon nut	1	
56	-----	Washer	1	
57	15-13	Taper pin	1	
58	15-10	Blank plug	1	
59	15-12	Blank plug	1	

SEAT NO: 15 $\frac{1}{2}$ STEADY, FOLLOW REST AND REAR TOOL POST

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	18-05	Hollow pin	3	
2	18-04	Grip	3	
3	18-09	Bushing	3	
4	18-06	Feed screw	3	
5	18-11	Sleeve	3	
6	18-08	Jaw	3	
7	18-07	Upper frame,	1	
	-10	Lower frame		
8	18-03	Set screw	3	
9	18-01	pin	1	
10	18-02	Set screw	1	
11	18-12	Grip	3	
12	18-19	Bolt	1	
13	18-17	Hexagon nut	1	
14	18-18	Washer	1	
15	18-20	Clamping plate	1	
16	18-15	Set screw	1	
17	18-13	Eye bolt	1	
18	18-16	Pin	1	
19	18-14	Grip	1	
20	19-03	Grip	3	
21	19-02	Hollow pin	3	
22	19-05	Bushing	3	
23	19-01	Feed screw	3	
24	19-04	Sleeve	3	
25	19-10	Jaw	3	
26	19-06	Body	1	
27	19-11	Set screw	2	
28	19-07	Grip	2	
29	19-09	Hollow set screw	2	
30	19-08	Washer	2	
31	26-16	Clamping bolt	3	
32	26-12	Upper frame	1	
33	26-13	Hexagon nut	4	

SEAT NO: 15 1/2 STEADY, FOLLOW REST AND REAR TOOL POST

INDEX NO.	PART'S NO	PARTS NAME	QTY	REMARK
34	19-08	Washer	4	
35	-----	Hollow set screw	2	
36	-----	Key	1	
37	26-10	Lower frame	1	
38	26-15	Hexagon bolt	6	
39	26-14	Bolt	4	
40	26-07	Clamping plate	2	

SEAT NO: 16

COOLANT EQUIPMENT

INDEX NO.	PARTS NO	PARTS NAME	QTY	REMARK
1	23-25	Flexible pipe	1	
2	23-27	Hollow set screw	3	
3	23-06	Angle plate	1	
4	23-26	Hexagon bolt	4	
5	23-22	Coolant pump	1	
6	23-23	Nipple	1	
9	23-08	Elbow	1	
10	23-10	Pipe	1	
11	23-08	Elbow	1	
12	23-15	Flexible pipe	1	
13	23-08	Elbow	1	
14	23-10	Pipe	1	
15	23-02	Slide connector	1	
16	23-03	Thumb screw	2	
17	23-11	Stop valve	1	
18	23-04	Upright	1	
19	23-17	Bracket	1	
20	23-03	Thumb screw	1	
21	23-27	Hollow set screw	2	
22	23-10	Pipe	1	
23	23-12 -14	Universal joint Union joint	1	
24	-----	O ring	2	
25	-----	Stop ring	1	
26	-----	Drain plug	1	
27	23-01 -13	Nozzle	1	

SEAT NO: 17

ELECTRICAL CONTROL ENCLOSURE

INDEX NO	PARTS NO	PARTS NAME	QTY	REMARK
1	-----	Lamp	1	
2	-----	Switch	1	
3	-----	Wire	1	
4	-----	Oval fillister head screw	4	
5	-----	Plate	1	
6	-----	Micro switch	1	
8	-----	Board	1	
9	-----	Washer	1	
10	-----	Oval fillister head screw	4	
11	-----	Magnetic Contector		
12	-----	Magnetic conector	1	
13	-----	Magnetic conector	1	
14	-----	Washer	1	
15	-----	Oval fillister head screw	9	
16	-----	Fuse set		
17	-----	Fuse	1	
18	-----	Fust set	1	
19	-----	Relay	1	
20	-----	Terminal set	1	
21	-----	Oval fillister head screw	1	
22	-----	Oval fillister head screw	2	
23	-----	Oval fillister head screw	4	
23	-----	Hollow set screw		
24	-----	Wire	4	
25	-----	Wire	1	
26	-----	Micro switch	1	
27	-----	Wire	1	

SEAT NO: 18

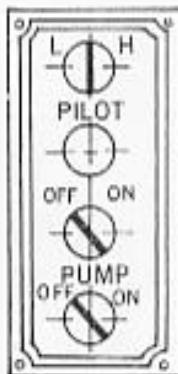
ELECTRICAL CONTROL ENCLOSURE

INDEX NO	PARTS NO	PARTS NAME	Q'TY	REMARK
1	-----	Lamp	1	
2	-----	Switch	1	
3	-----	Wire	1	
4	-----	Switch	1	
5	-----	Wire	1	
6	-----	Plate	1	
7	-----	Oval fillister head screw	4	
8	-----	Board	1	
9	-----	Washer	1	
10	-----	Oval fillister head screw	4	
11	-----	Magnetic contactor	1	
12	-----	Magnetic contactor	1	
13	-----	Magnetic contactor	1	
14	-----	Magnetic contactor	1	
15	-----	Washer	12	
16	-----	Oval fillister head screw	12	
17	-----	Fuse set	1	
18	-----	Fuse	1	
19	-----	Fuse set	1	
20	-----	Relay	1	
21	-----	Transformer	1	
22	-----	Washer	2	
23	-----	Oval fillister head screw	2	
24	-----	Terminal set	1	
25	-----	Oval fillister head screw	2	
26	-----	Oval fillister head screw	4	
27	-----	Hollow set screw	4	

OPERATING MANUAL OF THE TWO SPEEDS MOTOR

Please operate the machine along next order:

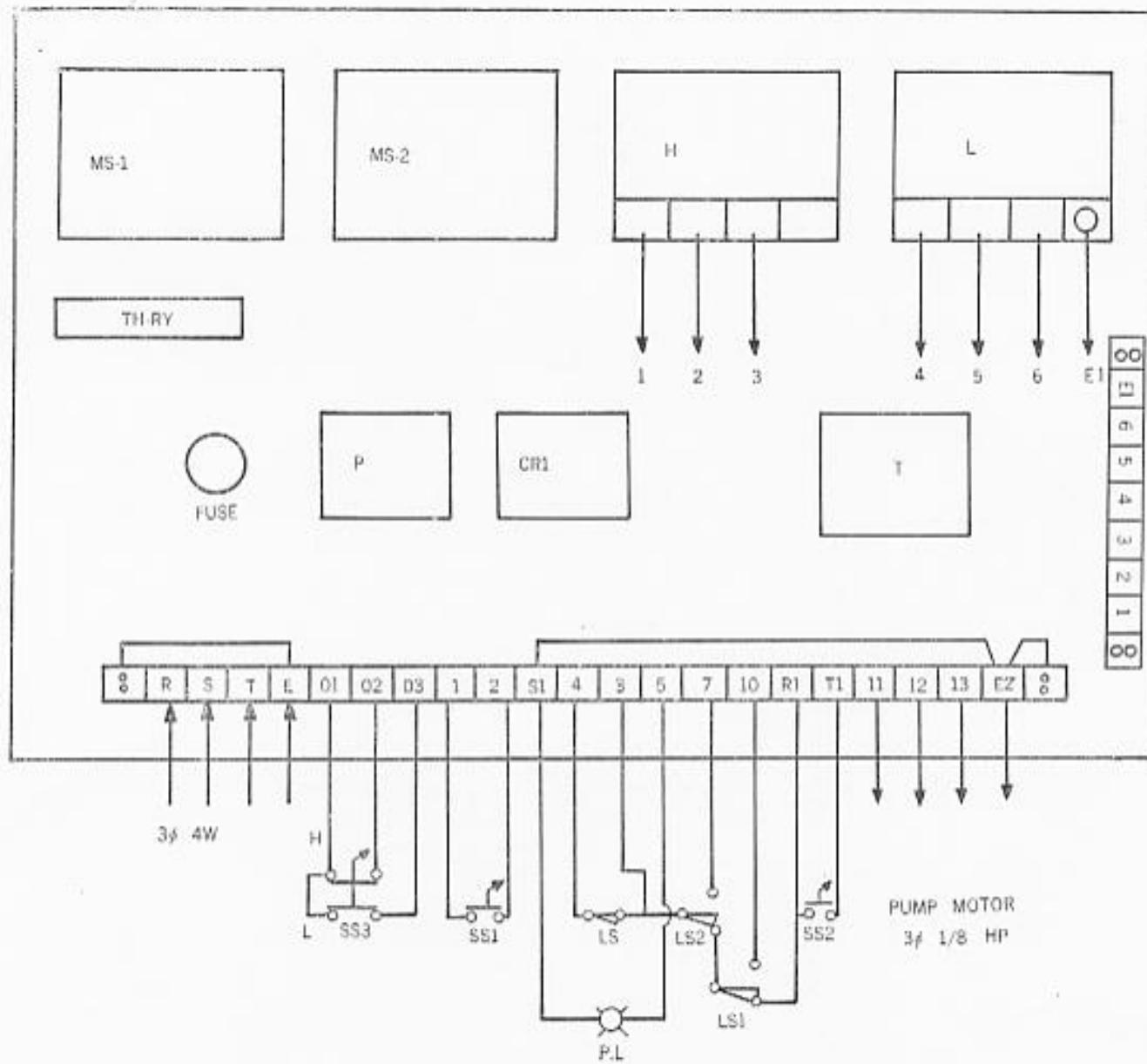
1. Make sure the position of the start lever to stop.
2. Turn the main switch to the right (on), pilot lamp will light.
This shows that machine is ready for operation.
3. When you put the start lever to the left for forward rotation, turn the start lever to the right for reverse rotation.
4. Step the brake pedal and could cut off electric source and stop motor in a second.
5. Place the start lever to "stop" position, pilot lamp will light and the machine will be ready for operation again.
6. When you operate this machine, turn the coolant pump switch to the right, hydraulic oil pump will act.
7. The spindle speed range, the motor characteristic, electric circuit diagram and the connect of wire are as follows:



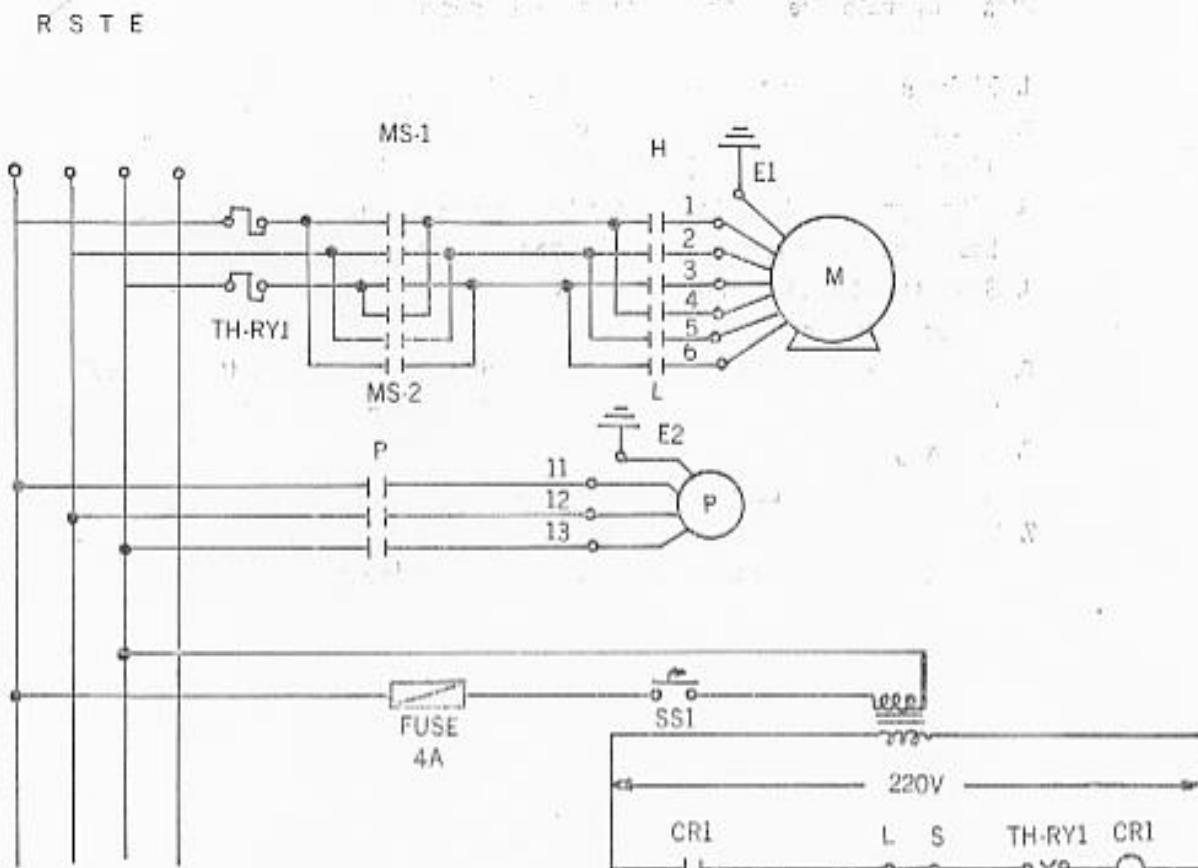
SPINDLE SPEED RANGE				
1030	1800	560	↑	H
155	270	83	↓	
690	1200	370	↑	L
100	180	55	↓	

MOTOR CHARACTERISTIC 60HZ		
HP	LOW SPEED 3	HIGH SPEED 5
RPM	1155	1730
AMP	9.4	13.4
POLES	6	4
CONNECTION TO LINE	456	123
VOLT	220	220

ELECTRIC CIRCUIT DIAGRAM OF THE TWO SPEEDS MOTOR



ELECTRIC CIRCUIT DIAGRAM OF THE TWO SPEEDS MOTOR



TH-RY: Thermo Relay
 MS1 : Forward Rotation Magnetic Contactor
 MS2 : Reverse Rotation Magnetic Contactor
 H, L : High And Low Speed Magnetic Contactor
 CR1 : Main Control Magnetic Contactor
 P, L : Pump Magnetic Contactor
 SS1 : Main Control Switch
 SS2 : Pump Control Switch
 SS3 : High And Low Speed Control Switch
 L, S : Brake Limit Switch
 LS1 : Start Lever Limit Switch
 LS2 : Stop Lever Limit Switch

